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BROACHING THE SHIP: RETHINKING SUBMARINES AS A SIGNALING TOOL IN NAVAL DIPLOMACY

by

James P. Stebbins

March 2015

Thesis Advisor: Leo Blanken
Second Reader: W. G. Ellis

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With the U.S. aircraft carrier fleet facing reduced availability, this thesis explores the possibility of using the submarine force in an expanded role in naval diplomacy.

This research suggests that submarines have the capability to communicate a signal to an opponent state by temporarily revealing themselves tactically. This signal of hidden capacity can be tailored into a tacit bargaining strategy that can significantly influence rival navies.

By examining the development of naval diplomacy over the last two hundred years, this thesis critically reexamines U.S.-aircraft-carrier-based diplomatic practices relative to the emerging use of rival submarine forces in asymmetrical signaling strategies. In examining Russian, British, and Chinese attempts to signal adversaries using submarines, this thesis provides context for the capacity submarines have in today's naval diplomatic setting to force large changes in opponents' strategic frameworks at low cost to the initiators.

Because of these findings, this thesis recommends increased evaluation of such activities from a diplomatic and strategic perspective and increased awareness that such signals may be aimed at our military.

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BROACHING THE SHIP: RETHINKING SUBMARINES AS A SIGNALING TOOL IN NAVAL DIPLOMACY

James P. Stebbins
Lieutenant, United States Navy
B.A., Ohio State University, 2008

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**NAVAL POSTGRADUATE SCHOOL
March 2015**

Author: James P. Stebbins

Approved by: Leo Blanken, Ph.D.
               Thesis Advisor

               W. G. Ellis, RADM (ret)
               Second Reader

               John Arquilla, Ph.D.
               Chair, Department of Defense Analysis

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ABSTRACT

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EXECUTIVE SUMMARY

This thesis explores attack submarines as a means of sending signals to opponents as a facet of naval diplomacy and strategic signaling. By examining states as unitary rational actors through the lens of Realism, one may examine multiple states from different recent historical periods in order to find similarities in their behavior. States consistently seek to attain advantages over one another in the international arena in order to improve their own security.[1] These advantages may be attained through the use of militaries and navies to communicate one's resolve and thus achieve one's desired outcome without open conflict.[2] Prior to the Second World War, several states used their navies to signal one another regarding their capabilities and intentions. This dialogue was relatively understood by all sides as the symmetrical signals sent to one another relied upon the technical capabilities and size of one's fleet.[3] Thus, one could influence others by way of the strategic signals inherent in the construction, modernization and deployment of one's fleet. After the Second World War this common framework was abandoned by competitors seeking to influence each other in favor of exploiting asymmetrical advantages. This language became more difficult to interpret and resulted in uneven signaling capabilities, which today grows more nuanced and effective.

Using this framework, these distinct periods may be examined. The first is the era following the Napoleonic Wars wherein the British Navy achieved the strength necessary to unilaterally enforce the political will of the British government around the world.[4] This period came to an end after the First World War and resulted in naval diplomacy evolving into a sort of discussion among competitors regarding the technical

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[1] Branislav Santchev, *Military Threats: The Cost of Coercion and the Price of Peace*, (Cambridge: Cambridge University Press, 2011), 18–28.

[2] Robert J. Art, "To What Ends Military Power?" *International Security* 4, no. 4 (Spring 1980), 5–9.

[3] Harold and Margaret Sprout, *Toward a New Order of Sea Power: American Naval Policy and the World Scene, 1918–1922* (London: Princeton University Press, 1943), 290–3.

[4] Arthur Herman, *To Rule the Waves: How the British Navy Shaped the Modern World* (New York: Harper Collins, 2004), 448–9.

characteristics of each other's fleets as the primary language.[5] This evolution in naval diplomacy may be characterized as symmetrical. The next period follows the Second World War wherein the United States Navy became the largest in the world and primarily relied on the aircraft carrier as its principal combatant, as opposed to the battleship.[6] In this era, competitors with the United States, chiefly the Union of Soviet Socialist Republics, understood the immense cost required in achieving near-peer status with the United States and thus sought asymmetrical advantages against its aircraft-carrier-centric fleet compositions. The third period examined is the recent past, primarily the post-Cold War era. Despite the extensive use of asymmetric strategies, the United States remains committed to using aircraft carriers to project its power and influence. Moreover, these aircraft carriers have become the focus for projecting soft power and influence as much as the hard power of combat aircraft.[7] Other fleets around the world provide examples of how submarines, nominally thought of as asymmetrical platforms, can be used to influence strategic decision-making and signaling by their opponents. These examples provide the opportunity for case studies by which we can better understand the growing role of submarines in naval diplomacy.

Naval diplomacy as we know it today is but the most recent amalgamation of an evolving diplomatic discussion between nations whose roots stem from the era following the British fleet's victory at Trafalgar and the subsequent defeat of Napoleon, commonly referred to as the *Pax Britannica*. Initially, Britain's navy stood out above its peers, and was used by the British government to achieve many political outcomes which were not only beneficial to England but were at times aimed at improving global commerce and the spread of democracy.[8]

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[5] Harold and Margaret Sprout, *Toward a New Order of Sea Power*, 161–90.

[6] Daniel Madsen, *Forgotten Fleet: the Mothball Navy* (Annapolis, MD: Naval Institute Press, 1999). 11.

[7] U.S. Navy Department, "…From the Sea: Preparing the Naval Service of the 21st Century," in *U.S. Naval Strategy in the 1990s: Selected Documents*, ed. John B. Hattendorf (Newport, R.I.: Naval War College Press, 2006), 87–99.

[8] Charles Krauthammer, "The Unipolar Moment," *Foreign Affairs*, 70, 1, America and the World 1990/91 (1990/1991), 29.

By the mid-to-late Nineteenth Century and the late Industrial Revolution, steam power, rifled barrels and steel armor supplanted sailing ships and smoothbore cannon as the primary constituents of a ship of the line.[9] Britain's mastery of the seas, so long unchallenged because of the technically difficult nature of constructing and successfully employing sailing ships against one's enemies, was challenged by other states whose industrial bases now allowed them to not only construct steel ships but also innovate and incorporate news designs of all types.

This period saw changes in battleship propulsion, armament, and protection that was at times so rapid that recent additions to the fleet rapidly fell into obsolescence.[10] This high rate of innovation allowed other navies to begin to catch up to that of Britain's: her fleet, large as it was in comparison to all others, was forced to retire many ships at a much higher rate than any previous period in order to maintain relevancy.[11] By the end of the First World War this model of innovation and rapid construction had fashioned a de facto naval diplomatic dialogue that primarily centered upon numbers and values: age, speed, armor, displacement, gun caliber, range, and other factors all combined to render opponent fleets into statistical relevance against each other.[12] It was these statistical evaluations that, for some decades, drove the competition for a navy's relevance in the world of naval diplomacy.

The United States' rapid innovation and massive industrial base left the country in possession of the largest and most destructive fleet in history at the end of the Second World War. The most visible sign of its power was focused in the fleet aircraft carrier. Similar to the period after the British fleet's triumph over Napoleon, the U.S. Navy initially faced a world in which there no true peer competitors existed. This opinion has

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[9] Harold and Margaret Sprout, *Toward a New Order of Sea Power*, 4.

[10] Nicholas A. Lambert, "Admiral Sir John Fischer and the Concept of Flotilla Defence, 1904–1909," *Journal of Military History*, 59 (October 1995), 640.

[11] John Keegan, *The Price of Admiralty: the Evolution of Naval Warfare* (New York: Penguin Books, 1988), 166–7.

[12] Harold and Margaret Sprout, *Toward a New Order of Sea Power*, 290–3.

been challenged but not overturned, even into the modern era.[13] With such a large discrepancy between the United States' fleet and those of the rest of the world, many states that can be or have been considered competitors or opponents have historically taken to constructing their fleet so as to hold the aircraft carriers of the U.S. fleet at an asymmetrical disadvantage.[14] The first true example of this is the Soviet fleet, which placed a high priority on constructing large numbers of attack submarines of various classes.[15]

Owing to the lack of a naval engagement during the Cold War, the Soviet submarine fleet could not display its persistent and capable submarines in the same way that aircraft carriers were. The unchallenged aircraft carriers, built to ever-higher standards and with ever-increasingly complex technology, grew in apparent capacity and importance.[16] Today, however, many states around the world without the industrial base to build, equip, supply and maintain aircraft carriers are capable of fielding submarines in large numbers.[17] Submarines stand to play a greater role in naval diplomacy as a greater number of states seek to purchase more and more highly-advanced platforms, not only to increase their navies' capabilities but also as a signal to regional competitors.

Several states have even used their submarines against their opponents in a unique and politically important way. This thesis explores several case studies of Russian, Chinese, and British attempts to use their submarines to *coerce* their competitors. The distinction must be made that *coercion* ceases once the first shot is fired, and from that point actors seek to *compel* each other to withdraw by further violence or threats of violence. The case study regarding British attempts to coerce Argentina via their submarines show why attack submarines, operating covertly to the best of their

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[13] Robert C. Rubel, "National Policy and the Post-Systemic Navy," *Naval War College Review*, 66, no. 4 (Autumn 2013), 17.

[14] Sergei G. Gorshkov, *Morskaya Moshch Gosudarstva* (Moscow, Russia: Voennoe Izdatel'stvo Ministestva Oborony SSR, 1976), trans. *The Sea Power of the State* (Malabar, FL: Robert E. Krieger Publishing, 1983), 182.

[15] Ibid., 195.

[16] Robert C. Rubel, "National Policy and the Post-Systemic Navy," 18–9

[17] Michael Raska, "Submarine Modernization in East Asia," *The Diplomat*, July 14, 2014, http://thediplomat.com/2014/07/submarine-modernization-in-east-asia/.

capability, are poor signalers of this attempt at coercion. Russia and China, however, have tacitly revealed their submarines to their opponents. These tacit revelations, moments when they have lost their advantage of stealth in strategically significant areas, have elicited responses from other governments that have far outweighed the costs to the submarines or the states that employed them.

In employing a *costly* signal at the tactical level through momentarily revealing themselves, they have at times achieved the result of forcing their opponents to alter their strategic decision-making processes in dramatic ways. In the instance of Russia's incursion into Swedish territorial waters, the Swedish government is increasing defense spending at a higher rate sooner than they had planned to.[18] More importantly, the defense spending is now focused upon improving the coastal and anti-submarine defense capabilities that were found to be so lacking this fall.[19] That money, intended for general military upgrades in the future, must now be spent upon defense assets only. Catching an opponent on the back foot in this way, at relatively no cost to oneself, shows that the ever-more-nuanced world of naval diplomacy has now begun to reach a point where attack submarines can send powerful signals and evoke strategic responses from an opponent.

The U.S. Navy stands to benefit from a greater understanding of these events in the strategic and political context. Aircraft carrier-based diplomacy, long the benchmark of American naval diplomacy, is being challenged by naval other states' diplomacy methods using their submarine capabilities. Since our aircraft carrier presence is likely to diminish for the next several years as a result of maintenance and overhaul, there is no better time to enhance our perception and stand ready to use our attack submarine fleet in a similar fashion.[20] We must not remain mired in our thinking that comparing numbers of

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[18] Gerard O'Dwyer, "Russia's Aggression Spurs Sweden to Boost Spending, Acquire New Capabilities," *Defence News*, May 7, 2014, http://archive.defensenews.com/article/20140507/DEFREG01/305070038/Russia-s-Aggression-Spurs-Sweden-Boost-Spending-Acquire-New-Capabilities.

[19] Ibid.

[20] Amaani Lyle, "Greenert: Sequestration Threatens Readiness, Modernization," Military.com, March 6, 2015, http://www.military.com/daily-news/2015/03/06/greenert-sequestration-threatens-readiness-modernization.html.

aircraft carriers or numbers and qualities of submarines is an objective benchmark of our capabilities with regard to other fleets. We must seek to employ and parry asymmetrical, newfound means by which these systems can be employed, both for and against our causes at home and overseas.

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My wife Leah stood by my side through my entire course of study, encouraging me in times of difficulty and providing a resonant sounding board when I bubbled over with ideas. She believed in me and my ideas even when I did not. Her love and support made this process one that I ultimately enjoyed, and sharing my difficulties and successes with her helped me greatly to remain focused and keep my nose to the grindstone. With her, I found opportunities to set down my pen and enjoy California with the love of my life. Thank you, my darling, for everything.

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I. THE NAVY'S ROLE IN STRATEGIC SIGNALING

The United States' means of naval diplomacy needs to be reevaluated. Its nuclear aircraft carrier fleet and the destroyers and cruisers of the van, after many years of extended deployments and demanding operational tempos, need a sustained period of intensive maintenance. The Chief of Naval Operations, ADM Greenert, recently stated that the budget shortfalls imposed by sequestration resulted in a systemic problem, wherein only 100 ships—one-third of the navy's force—meet the training, maintenance and proficiency requirements to deploy within thirty days of an emergency.

[1] With further delays in the construction of the *USS Gerald R. Ford*, the newest aircraft carrier slated to join the fleet, the number of aircraft carriers able to deploy as the primary instruments of naval diplomacy is shrinking. Sequestration cuts and maintenance delays will allow for only one surge-capable aircraft carrier strike group and amphibious ready group until about 2018: normally, three of each of these groups have been available, should the need arise.[2] One arm of the Navy that has weathered sequestration relatively unscathed may be able to bridge this capability gap: the submarine. However, the submarine service's long and less known history is one built upon its clandestine nature; could this arm of the Navy constitute a significant tool for signaling in the current diplomatic environment? This thesis examines the means by which naval diplomacy has evolved to a point where submarines are capable of sending costly signals that force changes in opponents' strategic decision-making processes.

Naval forces possess unique capabilities relative to other components of the military that allow them to rapidly provide coercive and deterrent signals to opposing states. These forces provide opponents with information regarding one's capacity and resolve over contested issues. For the past seventy years, the United States Navy has relied upon the aircraft carriers of the fleet in providing such information to its

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[1] *The Impact of Sequestration on National Defense: Statement before the Senate Armed Services Committee* (2015) (statement by Admiral Jonathan Greenert, U.S. Navy Chief of Naval Operations).

[2] Amaani Lyle, "Greenert: Sequestration Threatens Readiness, Modernization," Military.com, March 6, 2015, http://www.military.com/daily-news/2015/03/06/greenert-sequestration-threatens-readiness-modernization html.

opponents. However, in a world with constantly evolving military technology, a seventy-year-old naval diplomatic tool may require reevaluation. While the United States Navy remains committed to building, maintaining and operating aircraft carriers, the utility of submarines as an unorthodox means of signaling may help to increase the nation's diplomatic resources in future crises. In order to examine submarines in this role, we must first explore the foundational logic that argues for the existence of these military units as diplomatic tools within the context of state interactions.

A.   THE PEACETIME USE OF MILITARY FORCES: THE LOGIC OF DETERRENCE

Viewed from the perspective of Realism, states stand at odds against each other in an anarchic world where disagreements are settled by the utilization of power. States achieve this power by creating and manipulating their military forces. These forces may be used to attack or defend against a belligerent state, but they may also be used to send strategic signals to each other regarding their capability and their intent to cause injury upon each other, if need be.[3] Naval forces can effectively provide such signals, and their effectiveness derives from two unique properties. First, they can travel to distant points of contention with greater ease than ground forces, and are deliberately built to have long loiter times. Other platforms with long-range high speed, such as aircrafts, must frequently land for refueling and maintenance.[4] Second, naval forces' capacity for traversing the globe is unique; navies can freely operate in international waters and reach their destinations without violating sovereign states' borders by ground, or by the expense of air transportation. The sea is both the means of their transportation and the base from which they operate against their adversaries, all while respecting sovereignty in internationally recognized water space.[5]

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[3] Robert J. Art, "To What Ends Military Power?" *International Security* 4, no. 4 (Spring 1980), 5–9.

[4] Robert C. Rubel, "The Future of Aircraft Carriers," *Naval War College Review*, 64, no. 4 (Autumn 2011), 16–18.

[5] Department of the Navy, "Why the Carriers?" retrieved March 9, 2015, http://www.navy.mil/navydata /ships/carriers/cv-why.asp.

In order to discuss properly the relevance of naval diplomacy and strategic signaling, a broad theoretical lens must be established. The best lens for the present analysis is Realism. By classifying states as unitary rational actors, it becomes possible to gain traction on the exceedingly complex problem of international interactions. More specifically, realism simplifies actors' goals and motivations into a common framework[6] in which they never possess complete information regarding other states' intentions.[7] This important trait is responsible for both miscalculation of relative capabilities between rival states and the capacity for states to gauge each other's threats and signals.[8]

In such a framework, states in conflict have the capacity to use means other than open combat and warfare to attain their objectives. Whether their objective is greater security through resource gains or through reducing threats, states use their militaries to provide information to each other regarding their intent and capabilities.[9] Because constant open warfare is not a descriptor that rings true for the international community, the modal use of military force is through the threat of potential conflict that affect states' security calculations. In other words, military power may be ascribed a fungible political capacity; the utilization of one's military in relation to political conflict with another state provides information about one's resolve —and this holds true in peacetime as well as during war.[10]

Threatening an opponent to achieve a desired outcome requires that actors are calculating and self-interested. If this were true, then, communication—either overt or tacit—would cause the target to recalculate its choices. The two basic means by which

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[6] Hans J. Morgenthau, *Politics among Nations: The Struggle for Power and Peace*, rev. Kenneth Thomson (Boston, MA: McGraw Hill, 1985), 3−14.

[7] John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: W. W. Norton, 2014), 28–32. Mearsheimer provides his bedrock assumptions for the realist world: states operate in an anarchic international political framework, they maintain a military capable of offensive and defensive operations, they never possess complete information regarding other states' intentions, survival is always their primary goal, and that they are rational actors.

[8] This is a central argument in Geoffrey Blainey*, Causes of War* (New York: Simon and Schuster, 1988).

[9] Branislav Santchev, *Military Threats: The Cost of Coercion and the Price of Peace,* (Cambridge: Cambridge University Press, 2011), 18−28.

[10] Robert J. Art, "The Fungibility of Force," in *The Use of Force: Military Power and International Politics*, ed. Robert J. Art and Kenneth N. Waltz (New York: Rowman & Littlefield, 2009), 5–6.

this can be done are deterrence and coercive diplomacy. One state may deter an opponent in order to dissuade it from taking a certain action in the future, whereas coercive diplomacy is a tool that "seeks to persuade an opponent to cease his aggression rather than bludgeon him into stopping."[11]

Both deterrence and coercive bargaining share similar traits. They both rely upon one opponent understanding the other opponent's desired actions. In order for either deterrence or coercion to cause a desired outcome, one's opponent must possess sufficient information about the conflict and desired response. However, while states may conduct themselves rationally, disparities in customs, traditions, and nationalism play a role in selectively filtering, highlighting or hiding certain information.[12] Bargaining short of war must contain three basic pieces of information: the signaler's capacity for violence, the signaler's resolve to carry out the violence, and a sufficiently clear means of communication.[13] Navies can potentially deter and coerce because of their mobility, persistence, and capacity for swift and decisive action.[14]

Coercion and deterrence may not be as simple as demanding that a weaker state concede to a stronger state's demands. If states are rational actors, then they are capable of anticipating the cost of open warfare in the interest of their ultimate aims. Therefore, anticipated outcomes are endogenized into the types of demands that are made and accepted in an effort to achieve goals while avoiding costly conflict.[15] How, then, could one actor utilize its military to convince another actor of its desire to make war if necessary to achieve its objective?

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[11] Alexander George, *Forceful Persuasion: Coercive Diplomacy as an Alternative to War* (Washington, DC: U.S. Institute of Peace Press, 1991), 5.

[12] Ibid., 7.

[13] Jeffrey W. Knopf, "Three Items in One: Deterrence as Concept, Research Program, and Political Issue," in *Complex Deterrence: Strategy in the Global Age* (Chicago: University of Chicago Press, 2009).

[14] Although there is great debate to the historical significance and relevance of navies as effective coercion and deterrence tools, my claim here is that they possess merely the potential to deter an opponent. For a general overview of the various theories that claim navies possess some sort of political or deterrent relevance, *see* Kevin Rowlands, "Decided Preponderance at Sea: Naval Diplomacy in Strategic Thought," in *Naval War College Review*, 65, no. 4 (Autumn 2012), 89–105.

[15] James D. Fearon, "Rationalist Explanations for War," *International Organization,* 49, no. 3 (1995), 383–4.

B.   STRATEGIC SIGNALS AND TACIT BARGAINING

In his seminal works, foreign policy and national security scholar Thomas Schelling argues that the essence of diplomacy is the ability to utilize tacit bargaining for communication.[16] Costless signals are likely to be dismissed as "cheap talk," thereby conveying little information to the target.[17] Signals that are costly, however, such as "burning bridges" or "laying tripwires" can convey resolve over an issue in ways that verbal communication cannot.[18] The two major categories of all such tactics may be characterized as either "tying one's hands" or "sinking costs."[19] Tying hands occurs when a state generates an audience cost that would be detrimental to that state's status and image if the foreign policy issue results in a negative outcome for that state. By producing for itself a negative cost and tying it to an audience such as the international community, it produces a reason for it to take action to avoid an outcome that would reveal its threats as a bluff, and thus lose face. It is an ex post cost incurred by the state. Sinking costs is an ex ante cost, whereby a state takes a costly action that does not "affect the relative value of fighting versus acquiescing in a challenge."[20] When using these tactics, the sender imposes costs back onto itself in order to show commitment to an issue. What unifies such effective strategic signaling for Schelling are signals that cause the target to recalculate the resolve he believes the sender possesses.

There are several illustrations of both types of signaling in the modern context. U.S. President Barrack Obama "tied his own hands" by threatening a military response if the Syrians made use of their chemical weapons in their ongoing civil war: when the chemical weapons were used and President Obama did not follow through on his threat,

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[16] Thomas Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), 131–41. *See also* the analysis of Schelling's intellectual contributions in Robert Ayson, *Thomas Schelling and the Nuclear Age: Strategy as a Social Science* (London: Routledge, 2012).

[17] Thomas Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960), 17–20.

[18] Thomas Schelling, "An Essay on Bargaining," *The American Economic Review*, 46, no. 3 (June 1956), 282.

[19] James D. Fearon, "Signaling Foreign Policy Interests: Tying Hands Versus Sinking Costs," *Journal of Conflict Resolution*, 41, no. 1 (1997), 70.

[20] Ibid., 70.

he suffered the negative audience cost he hoped to avoid amongst the international community.[21] China has recently provided an example of sinking costs in the South China Sea. In their ongoing dispute over economic possession of the various island chains, the Chinese government commenced conversion of several partly submerged reefs into installations composed of runways and harbors capable of hosting military aircraft and vessels through large-scale dredging and land-reclamation projects.[22] These new islands do not increase China's claim to these territories because they are not natural land formations. They do, however, signal China's resolve to protect and provide for its military in these contested waters.

C. TACTICAL REVELATIONS: THE USE OF SUBMARINES IN STRATEGIC SIGNALING

The two necessary conditions for a credible threat are capacity and resolve. In a context such as the Cold War nuclear balance, signaling resolve was paramount. There was no question of the United States' and Soviet Union's capacity to annihilate one another with nuclear weapons by the late 1960s; the destructive capacity of nuclear warheads, their large inventories and reliable delivery systems were common knowledge. The key aspect both states routinely attempted to convey was their resolve. This, however, is not always the case in every strategic contest. It may be the case that signaling capabilities are useful—more specifically, by engaging in a costly signal that reveals one's own capability in an effort to shape an opponent's strategy by revealing that opponent's vulnerabilities.

We can explore this line of argument further and link it to a particular form of strategic competition. First, strategic signals as defined by Fearon only explore the two general categories of "tying one's hands" and "sinking costs," both of which focus on the

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[21] Ben Armbruster and Hayes Brown, "How We Got Here: a Timeline of the Syria Chemical Weapon Saga," Thinkprogress, August 28, 2013, http://thinkprogress.org/security/2013/08/28/2539341/syria-chemical-weapons-saga/.

[22] Jeremy Bender, "China is Building a String of Artificial Islands to Fortify Its Position in the Disputed South China Sea," *Business Insider*, January 30, 2015, http://www.businessinsider.com/china-is-fortifying-position-in-south-china-sea-2015-1.

issue of resolve.[23] However, signals may be tailored to show capacity. In particular, such signals can be designed to show flaws in an opponent's military organization or effectiveness. These defects, once highlighted, provide two options to an opponent: to either accept these flaws—and the corresponding reduction in influence on the world stage—or to adjust their strategic policies to remove the flaw. Taken to its extreme, an opponent could utilize such signals to drive an asymmetrically costly arms race. One could argue, for example, that the Cold War was won without exchanging conventional or nuclear weapons because the United States' strategy forced costs upon the Soviet Union that the Soviet military could not maintain, and so bankrupted its economy.

Andrew Marshall outlined such a strategy in a seminal 1972 RAND analysis that emphasized this notion of "competitive strategies" to drive up an opponent's cost.[24] One asymmetric arms race to which Marshall drew attention was air defense.

> The massive Soviet air defense effort probably has cost the Soviets more than it is worth…Therefore, part of a strategy for the long-term competition would involve looking for areas where we would like to keep them spending resources, and finding U.S. actions that would keep them spending in those areas.[25]

To do so, the U.S. invested in "cruise missiles and 'stealth' technology," which created vulnerabilities toward which Soviet air defense organizations "spent heavily attempting to counter. This was…a form of 'virtual attrition,' in which the response to a threat reduced overall enemy capabilities by spreading resources thin."[26]

We can relate this back to an emerging use of submarines as signals. Rather than solely utilizing its stealth advantage to be a weapon of defense (usage), it may become a valuable signaling tool of deterrence (non-usage). To do so may require calculated tactical revelations, whereby a submarine presents itself to an opposing naval unit to simultaneously reveal its own capabilities and an opponent's vulnerabilities. This is a

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[23] James D. Fearon, "Signaling Foreign Policy Interests," 69–70.

[24] Andrew W. Marshall, *Long-Term Competition with the Soviets: A Framework for Strategic Analysis*, RAND, April, 1972, http://www.rand.org/pubs/reports/R862.html, 33.

[25] Ibid., 25.

[26] Austin Long, *Deterrence: From Cold War to Long War* (Santa Monica, CA: RAND, 2008), 21.

"costly signal" of capacity, as it temporarily sacrifices the tactical advantage of the sub, but it may serve as a broader strategic instrument by shaping the behavior of an opponent.

D.   THESIS OVERVIEW

This thesis details the evolution of naval diplomacy over the past two hundred years and examines the role attack submarines play in other states' asymmetrical naval diplomatic strategies. This examination serves to highlight the importance of observing trends in naval diplomacy and the relative danger of stagnant strategic frameworks. By observing the actions of states whose navies' compositions are asymmetrically designed to hold aircraft carriers at risk, we observe the means by which submarines are used to send costly signals to their opponents and thus influence their opponents' strategic paradigms. This argument is fully developed in the following sections of the thesis. Chapter II examines Britain's diplomatic use of its naval forces following the Napoleonic Wars through the *Pax Britannica* and into the period between the world wars. This time period provides insight into the nature of western naval diplomacy and its evolution from Britain's hegemony to the peer competition beginning in the late Industrial Age and through to the interwar period. Chapter III illustrates the United States Navy's emergence from the Second World War as the undisputedly largest navy in existence and the influence this power and size and relative disparity between the United States and even its allies had upon the maintenance of its aircraft-carrier-centric methodology. It will also illustrate the growing comprehension of asymmetrical warfare and platforms, and the realization that fleets must not match pound-for-pound in order to achieve strategic objectives. Chapter IV provides a baseline understanding of the unique attributes nuclear submarines possess and illustrates several cases where attack submarines (either conventionally or nuclear powered) sent a costly signal through sacrificing their tactical stealth and security in order to force a strategic signal out of their opponents. The strategic signal opponents make may be either of a tying hands or sinking costs nature, but in either case the result is that one state's submarine briefly trades its stealth to highlight another state's lack of capability with regard to tracking sad submarine in the first place.

Thus, through their tactical revelation to their opponents, their small costly signal, significant only on the tactical level at the moment of revelation, requires a strategic response from the opponent state. Chapter V concludes this study with recommendations for the submarine community and the military at large. The United States must learn not only that other nations' navies have developed capabilities designed to take advantage of the United States' carrier-centric strategies via asymmetric platforms. The United States Navy must also learn itself how these nations are learning to use asymmetric platforms, namely submarines, to force strategic concessions from their opponents via costly signals of capability.

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II. WOODEN WALLS, IRON MEN: THE ESTABLISHMENT OF BRITISH NAVAL DOMINANCE AND ITS EFFECTS ON DIPLOMACY

To make sense of current naval signaling, its evolution over the last two centuries must be understood. This chapter outlines the growth of British naval power and its role in British diplomacy. The first half of the nineteenth century saw British sea power become an instrument of naval diplomacy under which world trade flourished and slavery was abolished. An unmatched fleet of wooden warships enforced a kind of naval diplomacy that appears simple compared to that of today. With no peer competitors, Britain's capacity for coercion and compellance met little resistance for many decades. But with the maturation of the Industrial Revolution in the mid-nineteenth century came warships of iron and steam propulsion, rifled barrels and exploding shells.[27] Other states gained the industrial capacity to construct their own fleets, fleets that did not require crews of men who had known the sea their whole life. Designs evolved so rapidly that the temporal window between the cutting edge and obsolescence grew much shorter than in the Age of Sail, and with technology outpacing existing ships of its fleet even the famous dockyards of England lost ground to other states. By the end of the First World War, naval diplomacy had evolved into a discussion among peers.[28] This period is significant as it established the norms of naval signaling in the context of capital ship investment.

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[27] These technologies and their implications are surveyed in Daniel R. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981) and Bernard Brodie, *Sea Power in the Machine Age* (Princeton, NJ: Princeton University Press, 1941).

[28] Arthur J. Marder, *From the Dreadnought to Scapa Flow, Vol. I: The Road to War 1904–1914* (Annapolis, MD: Naval Institute Press, 1961).

A.   ESTABLISHMENT OF BRITISH SUPREMACY

The British Royal Navy's defeat of the combined French and Spanish flotillas off Cape Trafalgar on 21 October 1805 was a watershed event in the Age of Sail. Naval engagements continued throughout the Napoleonic Wars but in conjunction with the massive loss of ships of the line and seagoing leadership, British blockade and port seizures ensured Napoleon's disparate naval assets and allies could not unite and generate local numerical superiority.[29] The seizure of French naval bases in the Caribbean, the Indian Ocean, Africa and Java not only reduced the French Navy's ability to conduct a *guerre de course*, it also increased the capacity of the British Navy to provide security for the nation's maritime commerce.[30] It proved a harbinger of the decades to come. Following the Napoleonic wars, the British Navy, operating from its stations flung far across the globe, grew in stature from protecting trade routes into a force capable of exerting H M Government's will to seek politically favorable outcomes with other states.[31] Britain's navy grew beyond its postwar role as protector of English maritime trade. Its many overseas stations provided ample basing for its frigates to range the world's trade routes, suppressing piracy and promoting the post-war British paradigm of a world order built upon free trade.[32] "Britain had a duty to make sure its sea power remained more dedicated to 'the service of others, than of itself'—and that the Royal Navy continued to rule the waves."[33] While providing said economic protection the British fleet provided the state with significant coercive power to help achieve its aims, such as the threatened use of trade embargoes combined with naval force to encourage other states to ban slavery in the first decades of the nineteenth century.[34] Beyond patrolling in the oceans of the world in the interest of mercantile safety and imperial

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[29] John Keegan, *The Price of Admiralty: the Evolution of Naval Warfare* (New York: Penguin Books, 1988), 104–5.

[30] Ibid., 104–5.

[31] Arthur Herman, *To Rule the Waves: How the British Navy Shaped the Modern World* (New York: Harper Collins, 2004), 448–9.

[32] Ibid., 415–18.

[33] Ibid., 449.

[34] Ibid., 419–23.

objectives, the British fleet maintained a concentration of warships in home waters unrivaled by the next three largest navies combined.[35]

The political goals with which the British government secured through prudent use of its fleet assets changed as its status diminished from being the sole naval power afloat to one among many. During the first half of the nineteenth century, they provided the seagoing enforcement of an international, decades-long effort to end the slave trade.[36] The British fleet assets in the Caribbean, South America and the waters of the North Atlantic provided President Monroe with tacit support in pursuit of the Monroe Doctrine and its specific rejection of Spanish attempts to reestablish a colonial empire in the Western Hemisphere.[37] Without Britain's political recognition in 1820 of the importance of American expansionism and political devotion to allowing the states of the New World to grow out from under the rule of the Old World, the Monroe Doctrine may not have been so successful:

> I would suggest there are no normal times. The world does not sort itself out on its own. In the nineteenth century, for example, international stability was not achieved on its own but, in large part, as the product of Britain's unrelenting exertions on behalf of the balance of power. America tended her vineyards, but only behind two great ocean walls patrolled by the British navy.[38]

This effort by the British government to utilize its navy as a coercive means to its political ends provided the growing naval powers of the world a template by which a single nation could direct the trade and promote the well-being of nations the world over. And as with all eras in human history, Britain's overwhelming command of the sea and its ability to unilaterally alter political status quos came to an end.

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[35] Ibid., 449.

[36] Arthur Herman, *To Rule the Waves*, 419–23.

[37] Ibid., 438–9.

[38] Charles Krauthammer, "The Unipolar Moment," *Foreign Affairs*, 70, 1, America and the World (1990/1991), 29.

B.   SUPREMACY CONTESTED

The last decades of the nineteenth century bore witness to revolutionary improvements in propulsion, metallurgy and artillery design.[39] Experiments in steam propulsion gave way to sailing ships with steam engines, and then to ships powered entirely by steam. Improvements in gun design and propellant charges yielded ever-larger calibers of naval rifle with ever-increasing range. Steel replaced wood as the principal material for hull construction. Turrets housed the new guns, providing greater versatility.[40] As Britain and other industrialized states began to build modernized navies, the British navy found that with increasing rapidity its older vessels, once capable of sailing proudly under the Union Jack for half a century in service to their country, were being rendered obsolescent with unnerving rapidity:

> Wooden wall had become, by 1890, as obsolete as sails and smooth-bores. Only steel could support the ever increasing weight and thrust of ordinance and engines. Only armored decks and sides could hope to withstand the shattering impact of explosive shells. The practical impossibility of combining maximum speed, sun power, and armor protection in a single ship of any given displacement had already brought about far greater differentiation of types than had ever developed in the era of sails.[41]

Alfred Thayer Mahan's *Influence of Sea Power upon History* revealed Britain's prominence as a result of its capacity to control sea lanes and mercantile fleets. This new interpretation of sea power's influence upon world trade and politics, however, focused on the importance of a main battle fleet whose sole purpose was to meet other states' main battle fleets and defeat them decisively at sea.[42] In one decisive action a fleet concentration could rid the seas of an adversary's battleships and thus be left free to roam the waterways of the world, hunting down commerce and commerce raiding cruisers at

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[39] *See* Leo J. Blanken and Jason J. Lepore, "Slowing Down to Keep the Lead in Military Technology," *Defence and Peace Economics* 22, no 3 (2011): 317–334.

[40] *See* Ian Johnston and Ian Buxton, *The Battleship Builders: Constructing and Arming British Capital Ships* (Annapolis, MD: Naval Institute Press, 2013).

[41] Harold and Margaret Sprout, *Toward A New Order of Sea Power: American Naval Policy and the World Scene, 1918–1922* (London: Princeton University Press, 1943), 4.

[42] Ibid., 12.

will. England's reaction to this concentration of force not only led to the construction of a capital ship fleet based upon the most advanced large-caliber gun designs, propulsion and protective armor, but also in the contraction of its navy: the men and capital required to run this fleet were directed away from the distant stations of the empire and cause no less than 154 smaller combatants and auxiliaries to be struck from the register.[43] The last major contraction of the fleet made by Admiral Sir John Fischer in 1904:

> To scrap a large number of gunboats and trade protection cruisers…is usually construed by historians as further evidence of his determination to "build up the Royal Navy's strength in home waters" and improve the fighting efficiency of the battle fleet—at any cost—even at the price of losing the Royal Navy the command of the ocean trade routes.[44]

This period of great innovation saw Britain's vice-like grasp upon naval superiority diminishing, as innovations sometimes rendered ships under construction obsolescent before reaching service and yielded great fluctuations in capability amongst the capitol ships of the fleet.[45] Despite these difficulties, British sea power remained stronger than that of other states owing to the ubiquitous nature of this obsolescence. Tacitly accepted by previous governments, the First Sea Lord declared in 1894 that Britain's navy should be built and maintained to defeat the two most powerful navies at sea, and that those ships counted toward this fleet should be "of the newest type and most approved design."[46] Although interpreted in different manners by politicians and military boards, the two-power standard generally maintained the approximate ability to challenge two fleets with an additional margin of error.[47]

The Great War and its aftermath tested these newfound theories and their assumptions. Only one battle pitted two concentrated fleets against one another, and the tally of destruction at Jutland left much room for speculation regarding the viability of the

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[43] John Keegan, *The Price of Admiralty*, 116–7.

[44] Nicholas A. Lambert, "Admiral Sir John Fischer and the Concept of Flotilla Defence, 1904–1909," *Journal of Military History*, 59 (October 1995), 640.

[45] Jon Tetsuro Sumida, *In Defence of Naval Supremacy: Finance, Technology and British Naval Policy, 1889–1914* (London: Unwin Hyman, 1989), 10–2.

[46] Ibid., 13–4.

[47] Christopher M. Bell, *The Royal Navy, Seapower and Strategy Between the Wars* (Stanford, CA: Stanford University Press, 2000), 3–9.

concept of concentrated battleships as a means for destroying the enemy. In addition, Britain and Germany had not constructed their mammoth battle fleets in isolation, and now America and Japan had capital fleets capable of contesting and defending their interests. Both Japan and the United States took advantage of Britain's preoccupation with the European war to expand their naval influence across their spheres of influence in the Pacific.[48] In the peacetime following the First World War, concentrated capital fleets remained close to their homeports, ready to sally forth in defense of their possessions and sovereignty. However, statesmen paid greater attention to the arms race between Germany and Britain in the decade leading up to the First World War and placed great emphasis on limiting such future competition.

Noting the massive price tag now required to maintain a two-power metric in determining adequate fleet strength and seeing only America as their next possible adversary, the British scaled down their requirements to a one power policy.[49] Even with the reduction in expectations, the cost of building and maintaining these new and massive fleets did not seriously improve the gains made in the mercantile and industrial realm to offset such costs.[50] In the Washington Naval Treaty and its attendant conferences, great pains were taken to develop a systematic method by which sea power among the navies of the world could be balanced so as to prevent another precipitous arms race.[51] Interestingly, it did not limit the construction of the weapons proven by the crucible of the Second World War to be such exemplary destructors: submarines.[52]

Given the growth of the various navies of the world during the first decades of the century and the viciousness with which the militaries of the European continent fought each other, the Washington Naval Conference provided an exceedingly calculated view of the world, from a sea power perspective. Not only had the overall concept of naval diplomacy evolved into a contest between peers, but this contest was also discrete and

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[48] Harold and Margaret Sprout, *Toward a New Order of Sea Power*, 34–5.

[49] Christopher M. Bell, *The Royal Navy, Seapower and Strategy Between the Wars*, 16–7.

[50] Patrick K. O'Brien, "The Costs and Benefits of British Imperialism 1846–1914," *Past and Present*, no. 120 (August 1988), 193.

[51] Harold and Margaret Sprout, *Toward a New Order of Sea Power*, 290–3.

[52] Ibid., 292.

knowable. Attendants to the conference agreed upon the specific ratings for battleships, battlecruisers and other combatants. Gun caliber, age, speed, displacement, range, and thickness of armor all played into the elaborate calculations that formulated "how much" each participating state's fleet counted toward the conference's maximum fleet strengths.[53]

Emerging onto the world stage as an instrument of Germany's attempt to wrest control of the sea from Britain, submarines were considered by many pundits and professionals as piratical warships unable to ensure the safety to the crews of the merchant vessels upon which they came to prey. While they introduced a new dimension to the struggle for sea control, "the ultimately successful [British] anti-submarine campaign had shown … in order to control the sub-surface it was necessary first to exercise indisputable command on the surface."[54] In the period between the two world wars, navies served again as guarantors of the mercantile sea-lanes and as a measure of protection against other nations' battle fleets. It should be noted that, unlike the previous period of mercantile prosperity, other states' navies now joined the British fleet in this effort. With the Washington Naval Treaty came a period of reduced outward contestation amongst the great industrial nations of the world for naval supremacy. The British Admiralty throughout the interwar period still believed in its navy's worldwide clout:

> The navy was the most visible symbol of British power and prestige abroad during the interwar period, and the Admiralty never questioned the link between naval strength and national influence…"the navy is the chief sanction of our Foreign Policy," [Admiral Sir Charles] Madden wrote in 1929; "it is hardly an exaggeration to say that every Foreign Office telegram is backed by it."[55]

Despite this general faith in the navy, Britain still favored massing its fleet in the vicinity of the Home Islands in their defense while sending portions of the fleet elsewhere in the empire. To them, it seems, combat at sea still relatively depended on tonnage, gun

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[53] Harold and Margaret Sprout, *Toward a New Order of Sea Power,* 161–190. Interestingly, although the delegations had little to argue about regarding what constituted a battleship regarding its tonnage or firepower, many parties took great care to adjust other figures and relationships that factored into the ultimate allowance of tonnage.

[54] Harold and Margaret Sprout, *Toward a New Order of Sea Power*, 194.

[55] Christopher M. Bell, *The Royal Navy, Seapower and Strategy Between the Wars*, 138.

caliber, and protection as the interwar period drew to a close. They saw missions focused on showing the flag as important diplomatic signals but more importantly that they were a waste of military capacity.[56] As the world grew closer to the outbreak of World War Two, Japan, Germany, France and Britain once again entered into increased naval construction. Battleships played a significant role in the German and British fleet strategies, but Japan entered into conflict with the United States using the platform that would define the next era of naval combat arms: the aircraft carrier.

C.   CONCLUSION

The era encompassing the late Industrial Revolution and the First World War is not merely a slice out of the historical record. In this period, Britain's navy began as an arbiter of its nation's overseas interests. The Royal Navy following the fall of Napoleon possessed the capacity to influence foreign political conflicts in favor of the British government. The Industrial Revolution and the rapid, overlapping changes within the naval arms and shipbuilding industries provided other states with naval power that could regionally challenge Britain's world-spanning fleet in combat or diplomatically. The revelation that Germany had commenced the full-fledged construction of a battle fleet at the turn of the century marked an event that Fearon would have labeled a "sunk cost" strategic signal, one mirrored by Britain. Britain's coffers alone poured nearly five times more money into this fleet buildup than had been expended in the decade previous to the arms race with Germany.[57] From this point forward, naval diplomacy became a conversation between states, not a one-way argument. This naval diplomacy placed great faith upon the numbers that composed opposing fleets: tonnage, gun caliber, armor, speed and other factors weighed heavily on many states' presuppositions. Naval combatants' future capabilities were as good as their capacity to out-figure their opponents on paper.

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[56] Ibid., 155–61.

[57] Jon Tetsuro Sumida, *In Defence of Naval Supremacy: Finance, Technology and British Naval Policy, 1889–1914* (London: Unwin Hyman, 1989), 19–22.

III. CREWCUTS AND FLATTOPS: THE ADVENT OF, AND CHALLENGE TO, AMERICAN AIRCRAFT CARRIER DIPLOMACY

The *Nimitz*-class aircraft carrier is symbolically linked with American foreign policy; that connection has evolved from the period after the Second World War and has encompassed numerous diplomatic issues and open conflicts. Aircraft carriers not only provided a flexible, long-range, concentrated and effective aircraft wing but represented the very foundation of the Allied victory: industrial capacity. The previous eras of wooden ships and dreadnoughts had focused their signaling upon tonnage, the weight of a broadside, and numbers. The carrier group became the capital ship of the post-War era, allowing for an unprecedented ability to project coercive force in the form of carrier-based attack aircraft.

This period, however, reveals a new dynamic: other states began to identify and exploit an asymmetrical advantage by targeting the carriers themselves. By relying on expensive platforms that few rivals could afford, the United States drove the emergence of offsetting strategies (asymmetric in nature) rather than the largely matching strategies of the battleship era (symmetric).[58] This is interesting in terms of signaling, as it drives the need for signaling capabilities in a way that was not as necessary in the previous capital ship era—based on numbers, tonnage, and gun size.

A.   PASSING THE TORCH FROM DREADNOUGHT TO FLATTOP

The end of World War Two left the United States in possession of the largest naval fleet in history, with several dozen aircraft carriers of various sizes and purposes at the tip of the spear.[59] This did not go unnoticed by other navies around the world. Although the post-war period saw the mothballing of much of the fleet, many aircraft carriers remained on the active ships' register and became the United States Navy's

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[58] See Emily Goldman, *Power in Uncertain Times: Strategy in the Fog of Peace* (Stanford, CA: Stanford University Press, 2010).

[59] Daniel Madsen, *Forgotten Fleet: The Mothball Navy* (Annapolis, MD: Naval Institute Press, 1999), 11.

primary naval diplomatic signaling tool.[60] Naval diplomacy focused upon coercion and deterrence against opponent states, primarily guided by the ballistic missile submarine fleet and the surface fleet's capacity for swiftly reaching distant points of contention in a show of force. Attack submarines, designed for anti-submarine warfare and covert reconnaissance according to the United States' strategy, were not similarly sidelined by opposing states seeking asymmetrical influence.

The United States' opponents during this period, notably the Union of Soviet Socialist Republics, adapted to take advantage of the American choice to concentrate so much funding into so few and such important platforms. The United States, in maintaining a fleet whose size and composition reflected the previous conflict in which it was victorious, provided the Soviet Union an opportunity to develop and compose its fleet so as to counter-balance the carrier fleets without imposing such severe costs upon itself. Goldman explores this type of strategy choice: "competitors that cannot match superior capabilities adopt asymmetric responses to offset superior strengths, and disruptive technologies—low-cost innovations that undermine the competitive advantage."[61] This "offsetting" strategy is often favored by weaker actors, and is distinctly different from the "matching" strategies that typified the battleship-centric era of the late *Pax Britannica* and the First World War.

As the Cold War developed, the Soviet Union further developed such asymmetric strategies to challenge the American navy at sea. The Soviet Union saw in American aircraft carriers a manageable number of strategically and politically significant targets, and so began construction of a large submarine fleet. Admiral Gorshkov, the commander-in-chief of the Soviet Navy, said:

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[60] Daniel Madsen, *Forgotten Fleet: The Mothball Navy*, 11–15.

[61] Emily Goldman, *Power in Uncertain Times*, 17.

The skillful generalization of the experience of military operations is an important task not only for military historians but also for leaders determining the direction of construction of the fleet…The experience of combat operations in the sea and oceanic theatres showed that the main, most universal and effective kinds of forces of the fleet have become submarines and aircraft.[62]

Approaching its naval construction program with this mindset and analyzing its own industrial capabilities, the Soviet Navy embarked upon a building program focused on a submarine-based counterbalance to the American carrier fleet.[63] The Soviet submarine fleet composition varied from the American fleet by building several submarine classes designed to hold a surface fleet at risk with close-in torpedo and ranged cruise missile variants.[64] The Soviet fleet deliberately constructed new units as foils to American ships, and it hailed nuclear powered attack submarine as the means by which a conventional naval war would be won against the capitalists.[65]

Unfortunately for the Red Fleet, no open combat provided validation or refutation of its theory of fleet construction. A fleet purpose-built to stop American carriers lacked the overt showmanship and capacity for ubiquitous service across the globe. Carrier-based aircraft participated in numerous conflicts that had devolved into actual combat throughout the Cold War. More importantly, they remained visible both as a sign to their allies and opponents regarding American presence, capacity and resolve. "American aircraft carriers…were used as geopolitical chess pieces to deliver messages of both threat and reassurance."[66] This was not the case for the Soviet Navy, whose hidden assets allowed for little naval diplomacy.

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[62] Sergei G. Gorshkov, *Morskaya Moshch Gosudarstva* (Moscow, Russia: Voennoe Izdatel'stvo Ministestva Oborony SSR, 1976), trans. *The Sea Power of the State* (Malabar, FL: Robert E. Krieger Publishing, 1983), 182.

[63] Ibid., 190–1.

[64] Ibid., 192–5.

[65] George E. Hudson, "Soviet Naval Doctrine and Soviet Politics, 1953–1975," *World Politics*, 29, no. 1 (October 1976), 98–9.

[66] Robert C. Rubel, "National Policy and the Post-Systemic Navy," *Naval War College Review*, 66, no. 4 (Autumn 2013), 16.

The advent of nuclear power improved carriers' capacity for duration and high-speed transit, but as technological innovation continued, the cost of building and maintaining the carrier fleet placed downward pressure on their numbers. With the christening of the *USS Enterprise*, nuclear aircraft carriers slowly replaced conventionally powered carriers as the symbol of American strategic interest and presence. American aircraft carriers represented the commitment of the United States in regional issues and conflicts that threatened ideological or economic interests. As early as the 1971 Indo–Pakistani Crisis, it became apparent that the Red Fleet intended upon fashioning itself into an anti-capitalist naval force: while the United States sent the *USS Enterprise* from the east coast of Vietnam where she was on one of her first deployments, the Russians sent two flotillas from Vladivostok, both assembled with ships and submarines, anti-ship and anti-aircraft missiles.[67] The United States arrived to send a message to India and Pakistan, while Russia arrived to send a message to the United States. The same is true for both the 1970 and the 1973 Arab-Israeli crises, which saw both the United States Sixth Fleet and the Soviet Mediterranean fleet sortied.[68] Again, the U.S. ships provided a strategic signal to Israel's opponents, while the Soviet fleet provided a strategic signal to the United States.

With the evaporation of the Soviet Union, aircraft carriers and the sea control they represented remained this selfsame symbol:

> What makes seapower so crucial in current conditions is that it can exert its influence without resorting to force. It can be present without another country's permission. What is offshore is sovereign U.S. territory, only loosely subject to the desires of those ashore. No base ashore offers anything like the same degree of political security; no base ashore can always be used as the U.S. Government chooses. Any base ashore carries with it commitments that may prove open-ended.[69]

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[67] James M. McConnell and Anne M. Kelly, "Super-Power Naval Diplomacy: Lessons of the Indo-Pakistani Crisis 1971," *Survival* 15, no. 6 (1973), 291–4.

[68] Stansfield Turner, "The Naval Balance: Not Just a Numbers Game," in *Foreign Affairs*, 55, no. 2 (January, 1957), 345.

[69] Norman Friedman, *Seapower as Strategy: Navies and National Interests* (Annapolis, MD: Naval Institute Press, 2001), 227–8.

Ironically, the threat posed against the aircraft carrier fleet was thought to be so low that for a time the Navy's own strategy focused on the means by which it supported forces ashore.[70] Despite the sometimes-weak strategic rhetoric underpinning the Navy's consistent strategic choice to maintain a significant number of combatants deployed forward, these forces have been on hand for humanitarian crises and political or military issues throughout the post-Cold War period.[71] In the absence of a distinct opponent, the military forces of the United States began more actively to train and exchange information with other militaries in regions of interest. In engaging with and earning the trust of other militaries besides those of its allies, the United States gained more avenues through which information regarding future opponents could be exchanged, and thus gained a significant benefit should the need to deter or coerce a future opponent occur.[72]

Aircraft carriers continue to represent strategic signal instruments in the realm of naval diplomacy because of the sunk cost involved in building, maintaining and deploying an aircraft carrier and all its assorted support vessels and infrastructure. This sunk cost serves as an *ex ante* commitment to resolve disputes with other states to the United States' benefit. Additionally, these same fleets may serve as the policy instrument whose coercion is meant to bolster the tied-hands of politicians in order to avoid the *ex post* cost of a failure of said coercion. It is not a far cry, however, from the economics concept of the sunk cost fallacy: sunk costs are unrecoverable past expenditures that should not be taken into account when determining whether to continue a project or abandon it, because they cannot be recovered either way. In other words, one should not continue to spend money on a thing simply because so many resources have already been committed to the venture in the past; to do so should be considered irrational.

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[70] U.S. Navy Department, "…From the Sea: Preparing the Naval Service of the 21st Century," in *U.S. Naval Strategy in the 1990s: Selected Documents*, ed. John B. Hattendorf (Newport, R.I.: Naval War College Press, 2006), 87–99. *See also* Robert C. Rubel, "National Policy and the Post-Systemic Navy," 17.

[71] Robert C. Rubel, "National Policy and the Post-Systemic Navy," 18–9.

[72] Ibid., 18–20.

B.   THE TORCH'S OBSOLESCENCE

While the aircraft carrier may be the symbol of American naval diplomacy and coercion, there is great variety among scholars as to the nature and definition of naval diplomacy. In this post-Soviet era with both far-flung American interests and a naval force capable of worldwide presence, Robert Rubel notes that the navy's capacity for "responsiveness as an underpinning to voice and influence has a certain inherent value, not least in that it coheres nicely with the contingent nature of statesmanship."[73] Naval diplomacy in this context is a strategic alignment of deployment and presence in concert with political objectives and strategic interests.

As the Soviet Red Fleet constructed a submarine force to answer the American carrier fleet, so too have other states elected inexpensive counters. Today, the principal countermeasure is labelled anti-access/area denial, or A2/AD. Surface ships can only defend themselves against a finite number of incoming contacts, whether they are missiles or manned craft. That finite number is driven by several factors: how many systems on board that can feasible defeat an incoming missile, the speed with which each missile is engaged and defeated, the time it takes for each weapon system to acquire a new target after defeating the last, and how much ammunition there is to defeat these targets. Even a decade ago, planners identified the threat of theater ballistic missiles with conventional warheads if the killchain, the series of information-sharing platforms between identifying a target and destroying it, could keep a target under surveillance.[74] The threat of a massive missile attack against an aircraft carrier and its strike group pushes its envelope of operations much farther out to sea to increase survivability. The downside is that the range of these missiles is often in excess of the aircraft carrier's strike aircraft ranges. Staying safe means, against some missile platforms, that strike operations cannot be accomplished without significant midair refueling operations. Thus, if aircraft carriers can be denied access to regions which are of interest to the United States, how can they fit within Robert Rubel's definition of naval diplomacy?

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[73] Robert C. Rubel, "National Policy and the Post-Systemic Navy," 18.

[74] Clark A. Murdock, "The Navy in an Antiaccess World," in *Globalization and Maritime Power*, ed. Sam J. Tangredi (Washington, DC: National Defense University Press, 2002), 4–13.

C.   CONCLUSION

Constructing a new aircraft carrier now costs more than ten billion dollars (the first in class usually incurs a significant cost increase through first-time engineering analysis and construction difficulties), but the cost of building or purchasing multiple long-range anti-ship missiles costs only a fraction of that, and buying a flotilla of small combat watercraft costs even less.[75] United States foreign policy rests on the assumption that aircraft carriers shall remain as potent as they have ever been both in terms of political and military capacity.[76] This expectation rejects the lessons of the past: naval power and capital ships have undergone constant change since the nineteenth century. Despite the change, American faith in the aircraft carrier as an effective military and political signal has remained in spite of the nuanced, asymmetric advantages and approaches other navies have been working to improve.[77] These navies have focused on holding the American surface fleet at an asymmetrical disadvantage, and as time passes these asymmetries in weapon systems have resonated in the political realm. This next chapter will explore the platforms with and the methods by which other navies have sent strategic signals with asymmetrically low tradeoffs on their part.

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[75] Clark A. Murdock, "The Navy in an Antiaccess World," 6–9.

[76] See the third chapter of John Arquilla, *Worst Enemy: The Reluctant Transformation of the American Military* (Chicago: Ivan Dee, 2008).

[77] Debate continues in the academic and military community concerning the actual deterrent capacity aircraft carriers possess. It is difficult to measure deterrence effectively due to the logical difficulty of proving a negative. This thesis does not attempt to prove the ineffectiveness of aircraft carriers as tools of diplomacy or deterrence. Such a body of work would be a thesis unto itself. In discussing the role of aircraft carriers from the historical perspective this thesis merely highlights the fact that the United States has pursued aircraft carrier construction throughout long periods when opponents sought to leverage asymmetrical opportunities. This historical perspective is important because it highlights the ways in which the United States Navy can learn from these examples of asymmetrical strategic signals given its current configuration with regard to its aircraft carriers and attack submarines.

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IV.   SUBMARINES: A DEVELOPING ROLE AS A SIGNALING TOOL

The aircraft carrier may have been the preferred diplomatic signaling tool in previous decades, but by no means has it been the only ship class used to do so. Focusing upon aircraft carriers means focusing on an increasingly limited aspect of naval diplomacy. In fact, the United States' possession of a large number of aircraft carriers following World War Two led the USSR's naval strategy toward anti-carrier warfare, for which submarines were ideally suited.[78] Although the Soviet navy possessed a large fleet of conventionally powered submarines capable of anti-ship warfare, a true threat to naval surface forces emerged when the Soviet navy began to build nuclear powered submarines. Since their inception in navies the world over, nuclear submarines have enjoyed several advantages peculiar to themselves: stealth, mobility, firepower and endurance.[79] These attributes make submarines unique among the naval units of the world, but also hamper their capacity for strategic signaling due to their emphasis on avoiding detection and the historical use of some of their weapon systems.

Based on the historical trajectory of naval diplomacy toward the exploitation of asymmetries, it is time to examine the nascent role of the submarine as a signaling tool. Can submarines be utilized in novel means? If so, can signal strategy be in line with Andrew Marshall's vision of competitive strategy—the use of costly signals to reveal asymmetrically costly vulnerabilities in an opponent's force structure or strategy?[80] This chapter proceeds in two parts. The first reexamines the physical attributes of the nuclear submarine through the lens of signaling in a competitive strategy dynamic. I will develop the concept of "tactical revelation" for submarines. The second part of the chapter provides illustrative cases from recent naval diplomacy efforts around the globe. These sketch out the changing strategic environment in which such a tool may be utilized.

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[78] James M. McConnell, "Doctrines and Capabilities," in *Soviet Naval Diplomacy*, ed. Bradford Dismukes and James M. McConnell (New York: Pergamon Press, 1979), 19.

[79] Chief of Naval Operations, Submarine Warfare Division, "Submarine Force Multi-Mission Roles," Department of the Navy, March 6 2015, http://www.navy.mil/navydata/cno/n87/today/mult-msn.html.

[80] Andrew W. Marshall, *Long-Term Competition with the Soviets*, 34.

A.   THE SUBMARINE AS A SIGNALING TOOL: RE-EVALUATING THE SUBMARINE'S ATTRIBUTES

Stealth is a critical factor in a submarine's role. If its location is known to the enemy, this greatest of advantages is removed. Radar, aircraft and to a limited extent satellites can all locate surface combatants at long ranges. A submarine is relatively immune to all these forms of identification: aircraft and radar must be in very close proximity to a submarine to detect it, and even then only when the submarine is at or near periscope depth.[81] This advantage presents the submarine with a great tactical and operational advantage but greatly reduces its capability as a strategic signal due to the lack of information generally provided regarding submarines' locations. Maintaining a stealthy posture on mission is essential to carrying out a submarine's general roles in ISR and sea control.[82] Its frequent use in this capacity generally limits its use in a strategic manner.

Mobility is an advantage gained through the advent of nuclear power. Once confined to the surface in order to effect rapid movement, submarines powered by nuclear fission possess the capacity to cover great distances with nearly the same rapidity as surface ships. Indeed, perhaps faster: if dispatched with all haste, conventionally powered surface combatants suffer from rapid fuel consumption at high speeds, and aircraft carriers travelling with a battle group are similarly hindered by their compatriots. Submarines are uninhibited by such a shortcoming. Additionally, this mobility allows for submarines to reposition themselves far from a datum at which they have been discovered by opposing forces. Nuclear submarines detected by the enemy rely upon this mobility to regain their stealthy, covert posture.

Firepower provided by the submarine force varies greatly. Fast attack submarines carry the venerated Tomahawk sea launched cruise missile (SLCM) and the versatile Mk 48 heavyweight torpedo. These alone allow a combatant commander great variety in the means with which he uses the submarines at his or her disposal: the combined attributes

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[81] Jacquelyn K. Davis, Michael J. Sweeney and Charles M. Perry, "The Submarine and U.S. National Security Strategy into the Twenty-First Century," *Institute for Foreign Policy Analysis* (Cambridge: Tufts University Press, 1997), 65–7.

[82] Ibid., 51–2.

of stealth and mobility allow for rapid positioning and undetected SLCM launches against land and sea based targets. *Ohio*-class submarines carry ballistic missiles whose range provides the national command authority the capability to strike most any land target on the planet with nuclear weapons. Converted *Ohio*-class submarines can carry up to 154 Tomahawks in addition to embarking and deploying several dozen Special Forces operators.[83] A submarine possesses the capability to visit great destruction upon a surface fleet and project precision destructive power onto land. Although designed for sea control and similar roles, the dearth of seaborne combat since the Second World War has provided the American submarine force few opportunities to show its capability and resolve outside of its role as covert observation platforms.

Endurance is simple. A nuclear-powered submarine has only three factors hampering its time at sea, namely the health of its crew, its supply of spare parts and consumables required for reactor operations, and food. With a sufficient load-out of consumables and weapons, a nuclear submarine may remain operational at sea as long as necessary.[84] The reactor supplies sufficient power to parse oxygen from water, scrub carbon dioxide from the air, illuminate the ship, and generate potable water.[85]

Survivability is enhanced due to its operation below the surface of the ocean:

> The water medium provides the greatest protection and concealment. It has the least ranges for detection. It offers the greatest shielding of [detectable] radiations. And it causes the greatest span of time for tactical actions. In today's environment of electronics, very high speed systems, and precision weaponry of great damaging power, the need for covert operations and surprise in attack become paramount, and submarines offer a high degree of both.[86]

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[83] Ronald O'Rourke, *Navy Trident Submarine Conversion (SSGN) Program: Background and Issues for Congress* (CRS Report no. RS 21007) (Washington, DC: Congressional Research Service, 2008), 3, http://fas.org/sgp/crs/weapons/RS21007.pdf.

[84] Brent A. Ditzler, "Naval Diplomacy Beneath the Waves: A Study of the Coercive Use of Submarines Short of War" (master's thesis, Naval Postgraduate School, 1989), 35.

[85] Jeffrey R. Wyatt, "No More Loose Fillings or Slow Embalming: How Naval Science Helped Submariners Breathe Easy," *Undersea Warfare* 3, no. 2 (Winter 2001), http://www.navy.mil/navydata/cno/n87/usw/issue_10/breathe.html.

[86] Phoenix (pseudonym), "The Potential of the Nuclear Submarine," *Submarine Review*, October 1984, 9–18.

In remaining submerged nuclear submarines not only maintain the most efficient posture for operations, but also remain relatively impervious to the anti-ship cruise missile threat that has grown over the past several decades.[87] Again, this mode of operations may protect a submarine but in shielding it from detection and general observation it gains tactical and operational advantages to the detriment of its capacity for strategic signaling.

Nuclear submarines have occasionally provided states with the means and the situational opportunity to send strategic signals. Primarily, though, nuclear attack submarines and, in their absence, conventionally powered submarines in the United States' and allied fleets conducted many clandestine operations and found their niche in providing persistent intelligence while remaining unseen themselves.[88] The remainder of this chapter will focus upon examples of submarines used to send signals to other states or their naval combatants. The example illustrating the British attempt to provide information about their resolution through their submarines serves to show just how difficult this information can be to convey if the submarines one uses remain covert. The remaining examples include cases where submarines lost their advantage of stealth. Through this "tacit revelation" on a purely tactical level, the reactions these submarines drew from their strategic opponents ranged from slight to major strategic signals, of the kind Fearon distinguished, those that "tied" actors "hands" or those into which actors "sank costs."[89]

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[87] Brent A. Ditzler, "Naval Diplomacy Beneath the Waves," 35–6.

[88] Sam Bateman, "Perils of the Deep: the Dangers of Submarine Proliferation in the Seas of East Asia," *Asian Security* 7, no. 1 (Spring 2011), 64.

[89] Brent A. Ditzler, "Naval Diplomacy Beneath the Waves," 59. One important distinction to make in the sending of strategic signals for this discussion is that if submarines are employed as part of a strategic signal and thus serve to bolster that signal, they are in fact signaling, and the same distinction can be illustrated for naval diplomacy in general with regard to submarine participation.

B.   ILLUSTRATIVE EXAMPLES OF EMERGING NAVAL DIPLOMACY

The following illustrative cases sketch out the emerging tenor of global naval diplomacy. This is important as it shows the policy space in which a re-imagined U.S. submarine strategy would exist. Beginning with the Falkland War in 1982, the cases serve to show how attack submarines in their traditional role maintaining a covert posture possess little power to coerce an opponent. However, by selectively leveraging a tactical shift out of their covert posture and revealing weaknesses in opposing defensive systems, submarines have caused their opponents to take actions detrimental to their strategic goals at costs far greater than those incurred by the submarine's own navy.

1.   Britain and Argentina: Coercion Fails, Compellance Succeeds

During the lead up to the Falklands crisis of 1982 and before the commencement of hostilities, three nuclear submarines of H. M. Navy received orders to either deploy toward or prepare to deploy to the south Atlantic in order to have them on hand pending an escalation in the diplomatic crisis at hand.[90] As LT Ditzler pointed out in his thesis regarding submarines in diplomatic roles, this submarine fleet sortie as a signal to Argentina had a precursor[91]:

> Nearly five years earlier, in late 1977, indications of possible Argentine hostile intent prompted the British to "buttress the Government's negotiating position by deploying a force of sufficient strength, available if necessary, to convince the Argentines that military action by them would meet resistance. Such a force would not be able to deal with a determined Argentine attack, but it would be able to respond flexibly to limited acts of aggression. The Committee agreed that secrecy should be maintained about the purpose of the force. One nuclear-powered submarine and two frigates were deployed to the area, the submarine to the immediate vicinity of the islands with the frigates standing off about a thousand miles away."[92]

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[90] U. K. Parliament, *Falkland Islands Review: Report of A Committee of Privy Counselors, HMSO,* January 1983, 61–4.

[91] Brent A. Ditzler, "Naval Diplomacy Beneath the Waves," 61.

[92] U. K. Parliament, *Falkland Islands Review: Report of A Committee of Privy Counselors, HMSO,* January 1983, 18.

As events played out, the diplomatic crisis devolved into a firefight and the quiet deterrent signal provided by the British submarines did not prevent the Argentinian fleet from sortieing. *HMS Conqueror*, a nuclear submarine on station as per orders, executed her role as an enforcer of the naval exclusion zone in effect around the Falkland Islands and on 2 May 1982, with the explicit permission of the Ministry of Defense, engaged and sank the *General Belgrano*.[93] Following the sinking of the cruiser, the Argentinian Navy retreated to its territorial waters on the South American coast for the remainder of the conflict.

Although in this instance a nuclear submarine displayed both its capability and resolve to utilize its weapons against an enemy, it was only because it had displayed its resolve that the opposing fleet obeyed the terms of compellance. This is the only example of a nuclear submarine of any navy sinking another naval vessel with its torpedo armament. While this instance in naval history serves to show submarines' capacity to wait until called upon to engage an opposing naval force, the diplomatic effort to avoid violence failed and it was only through this violence that the threat of submarine engagement caused the opponent to reevaluate its strategic mindset in relation to the dispute at hand. And again, this dispute had already devolved to violence. This instance serves as a reminder, even today, of the shocking capacity for a nuclear attack submarine to reduce the enemy's forces and alter their decision-making routines. However, the goal of strategic signaling is to avoid military conflict altogether. This lesson displays the level of influence a submarine can have over its opponents when it is allowed to tactically demonstrate its combat capabilities and resolve.[94]

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[93] Martin Middlebrook, *Operation Corporate: the Falklands War, 1982* (New York: Viking, 1982), 148–9.

[94] The British Navy has routinely sent attack submarines to the South Atlantic to provide a deterrent force since the Falklands War. These deployments have been dubbed the "secret weapon of ultimate deterrence" against Argentina in order to dissuade any further attempts to invade the islands. *See* Marco Giannangeli, "No British Submarines to Patrol the Falkland Islands," Express.com, March 10, 2013, http://www.express.co.uk/news/uk/383125/No-British-submarines-to-patrol-Falkland-Islands. Although this submarine force may now prove a credible deterrent, it was only taken seriously after the sinking of the *General Belgrano*. This thesis searches for means by which submarines can send credible signals to adversaries without resorting first to violence.

2.   China and Japan: Whose Senkakus?

On May 12, 2013, Japanese maritime assets detected an unknown submarine off the coast of an island in the Okinawa prefecture, an incident preceded by the detection of another unknown submarine on May 2 to the northeast. Both submarine detections placed their locations in the vicinity of Japan's twelve nautical mile territorial water boundary. The Japanese Maritime Self-Defense Force sortied significant naval assets to continue tracking the submarines, which later departed.[95] Presumed to be Chinese, the Japanese government warned China "that an order deploying the military to maintain maritime security could be issued if submarines enter Japan's territorial waters."[96] This was a bold claim: had an unknown submarine entered into Japanese territorial waters, it would have been fired upon. This military deployment warning was one step away from a strategic signal. Japan warned China, the likely perpetrator, that it would be forced to take lethal military action against an encroaching submarine.

This incident shows only a part of the strategic signaling exchange between China and Japan over the recent territorial dispute in the Senkaku Islands, known to the Chinese as the Diaoyu Islands. The submarine sightings represented a facet of Chinese military and political threats and coercions stemming from the Japanese government's purchase of three privately-owned islands in a resource-rich area of the East China Sea.[97] Both states have long claimed the islands as part of their own territory; this event is only the latest Chinese submarine-related incursion around Japanese territorial waters.[98] The sighting of a pair of attack submarines caused Japan to send a strategic signal in return. Thus China's tacit signals elicited an overt Japanese response on a much larger scale. This asymmetric

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[95] Alexander Martin, "Tokyo Issues Warning After Submarines Are Spotted," *The Wall Street Journal*, May 14, 2013, http://www.wsj.com/articles/SB10001424127887323716304578482331157168110.

[96] Ibid.

[97] Ibid.

[98] Peter Dutton, "Scouting, Signaling, and Gatekeeping: Chinese Naval Operations in Japanese Waters and the International Law Implications," *U.S. Naval War College, China Maritime Studies Institute* no. 2 (February 2009), 6–12.

signaling benefits China, whose "tacit revelations" and other military activity for the past decades have inspired an undersea arms race in the region.[99]

3. China and the United States: Gleaning the Wrong Message from a Costly Signal

On October 28, 2006, a *Song*-class Chinese conventionally powered attack submarine surfaced five miles from the *USS Kitty Hawk* and its battle group in what was estimated to be a nominal firing position while the battle group steamed in the vicinity of Okinawa in preparations for an exercise.[100] Despite setting off alarm bells within the Pentagon regarding the apparent ease with which the submarine penetrated the escort screen, the incident failed to generate a strong response from the United States. As shown earlier, the U.S. Navy's concern with maintaining the image of its aircraft carrier fleet allowed in this instance the denial that this situation could be replicated in a time of conflict. Unlike the other cases in this chapter, this is the only one in which a submarine intentionally placed itself into a tactically disastrous posture in order to attract attention. Broaching a submarine or utilizing its active sonar system could invite attention. Once surfaced however, even if trimmed for submerged operations, it takes time to fully resubmerge. During this time, one is left open to not only missile and torpedo attack, but even gunfire. If the pressure hull is penetrated, then the benefit of submerging the submarine and regaining one's stealth now exacts the price of bailing out incoming seawater.

While the decision to surface the submarine may have been slightly more dramatic than necessary, a period followed where naval planners in the United States and Japan legitimately thought that China was about to out-produce them in submarines. Harkening back to a bygone era, the determination that whether the United States or China possessed more submarines (of any and all types) somehow figured prominently into which submarine force was superior displays a surprising lack of analysis regarding

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[99] Michael Raska, "Submarine Modernization in East Asia," *The Diplomat*, July 14, 2014, http://thediplomat.com/2014/07/submarine-modernization-in-east-asia/.

[100] No author, "China Sub Stalked U.S. Fleet," *The Washington Times*, November 13, 2006, http://www.washingtontimes.com/news/2006/nov/13/20061113-121539-3317r/.

each navy's goals and commitments.[101] China revealed the capabilities of one of its midgrade, indigenously produced diesel powered submarines. What of the quieter, more capable *Kilo* class submarines it purchased from Russia, or its next-generation *Yuan* class air independent propulsion submarines?[102] Although the U.S. Navy took notice of this *costly* signal on the part of the Chinese submarine, it is unclear in the unclassified material regarding the subject if it caused any major reaction within the navy, let alone a *strategic* response.

Ironically, this incident with the *Song* and the *USS Kitty Hawk* occurred a decade after the United States had sent a strategic signal to China. Reacting to a period of heightened tensions and desirous of upholding Taiwanese independence, the United States sent two aircraft carriers to the vicinity of the Taiwan Straits, the *USS Nimitz* in December of 1995 and the *USS Independence* in March of 1996.[103] The People's Liberation Army Navy was not equipped to repel such a force. Thus, with this template in mind and with a newly-earned understanding of the sea space around Taiwan, the PLA(N)'s long-term design focused upon submarines and destroyers in the anti-surface ship role along with an adaptation of Admiral Gorshkov's zonal defense concepts.[104] China took visceral lessons learned regarding the United States' carrier diplomacy and retooled its naval construction and defensive paradigm using other lessons learned from the Soviets. Lessons learned about the same aggressive use of aircraft carriers. And now, China stands ready to strongly counter the United States' aircraft carrier formations with its more nuanced strategic lexicon.

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[101] Robert Axe, "China's Overhyped Sub Threat," *The Diplomat*, October 20, 2011, http://thediplomat.com/2011/10/chinas-overhyped-submarine-threat/.

[102] Peter Dutton, "Scouting, Signaling, and Gatekeeping," 8.

[103] Leszek Buszynski, "The South China Sea: Oil, Maritime Claims, and U.S.-China Strategic Rivalry," *The Washington Quarterly* 35, no. 2 (Spring 2012), 145.

[104] Ibid., 146–8.

4.   Russia and Sweden: A Flagrant Violation of Sovereign Territory

An examination of Russia's recent use of its submarine force provides compelling evidence of its effectiveness in forcing strategic signals from others. Following a radio intercept on a frequency used by the Russian submarine fleet for distress purposes, the Swedish military began a two week long hunt within and around its waters in the vicinity of the Stockholm archipelago for an intruding submarine.[105] The hunt turned up sufficient evidence including a photograph of a diving submarine, mini sub tracks on the seafloor derived from sonar data, a witness to the surfaced submarine and sonar data corroborating the sighting to unite Swedish military and public officials in condemning the Russians for violating their territorial sovereignty.[106]

This came at a time when long-term budget cuts had eroded Swedish military capability, and with the crisis in Ukraine compounding Swedish defense ministers' concerns regarding the state's capacity to defend itself, proposals forwarded to parliament are slated to increase defense spending in excess of ten percent of last year's budget.[107] Sweden has increased its manpower and equipment requirements in the wake of these events and, despite this increase in spending, the Swedish Defense Chief stated that even with the minimum expected spending increase the primacy of the budget would only cover these costs: they would not even go toward procurement of new vessels and capabilities.[108] The Swedish government has been put in the position of pushing forward spending increases it already had envisioned for the coming years in order to make

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[105] Magnus Nordenman, "Lessons from Sweden's Sub Hunt," *U.S. Naval Institute*, October 28, 2014, http://news.usni.org/2014/10/28/lessons-swedens-sub-hunt.

[106] Elias Groll, "Swedes Find Definitive Evidence of Submarine, Russians Call Them Unmanly," *Foreign Policy*, November 15, 2014, http://foreignpolicy.com/2014/11/15/swedes-find-definitive-evidence-of-submarine-russians-call-them-unmanly/.

[107] Gerard O-Dwyer, "Swedish Military Fights for Larger Budget," *Defence News*, January 27, 2015, http://www.defensenews.com/story/defense/policy-budget/budget/2015/01/25/sweden-military-larger-budget/22173811/.

[108] Ibid.

greater strides in acquiring submarines and anti-submarine warships to plug this capability gap highlighted by the Russian intrusion.[109]

The apparent penetration of territorial waters by the submarine or submarines of the Russian Federation is a serious violation of international treaties and norms. Had it or they been positively identified, Sweden would have been within its rights to sink the submarine or submarines to protect its sovereign territory against foreign intrusion. Having evaded Sweden's search, the Russian intrusion has significantly altered Sweden's strategic outlook. As Russia began conducting hybrid warfare against Ukraine, plans had been made within the government to raise military spending over the next decade as a strategic signal to Russia. The submarine intrusion, reminiscent of Cold War tensions thought to be long gone, has forced the Swedish government to push those spending timetables up. Tellingly, spending more money is not a sufficient signal. It must now be spent improving the country's anti-submarine capabilities and naval infrastructure. The spending must now be tailored towards defense of the country. The submarine incursion forced a change in the nature of the costs Sweden desired to sink in its political standoff with Russia.

This incident also serves to highlight the difficulty between initial detection and destruction of a submarine in the littoral environment. The evidence provided by the Swedish military point to a smaller submarine than those of the United States' fast attack force, but with the capacity for a lower top speed. It also highlights the grave political consequences of entering into another state's territorial waters (and subsequently being detected). The submarine parted with one of its decisive advantages, stealth, and achieved an aggressive strategic response in return. In regaining its stealth, it removed its identity and thus the culpability of the state that sent it. For little to no monetary cost to itself, the state that sent the submarine gained the advantage of forcing a change to the strategic signal sent by Sweden to Russia from one of flexibility and measured response in future years to one that must now focus upon defense of its territorial waters.

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[109] Gerard O'Dwyer, "Russia's Aggression Spurs Sweden to Boost Spending, Acquire New Capabilities," *Defence News*, May 7, 2014, http://archive.defensenews.com/article/20140507/DEFREG01/305070038/Russia-s-Aggression-Spurs-Sweden-Boost-Spending-Acquire-New-Capabilities.

5.   Russia and Britain: Boomers in the Barn

November and December of 2014 bore witness to a similar occurrence off the coast of Britain. After a brief sighting of a suspected Russian submarine periscope in the vicinity of the Faslane ballistic missile submarine base in Scotland by a fishing trawler, the British Ministry of Defence requested assistance from NATO allies in the form of antisubmarine warfare capable aircraft in a failed attempt to locate the loitering offender.[110] The United States, Canada and France deployed several maritime patrol aircraft to Britain to aid in the fruitless search. The British retired their Nimrod maritime patrol and antisubmarine warfare aircraft in 2010, saving an estimated four billion pounds annually in the Royal Air Force budget.[111] Like Sweden, Britain had been in diplomatic and economic conflict with Russia over its undeclared intrusions into Ukraine and had been a member of the coalition of states throughout the Western Hemisphere to place economic sanctions on Russia and Russian interests in 2014.[112]

A nearly identical event occurred in late December of 2014 and early January of 2015: a periscope was again sighted in the vicinity of Faslane and Britain was forced to request maritime patrol aircraft from the United States to aid in delousing the area.[113] Embarrassed by Britain's inability to conduct the search independently, the Scottish National Party's defense spokesperson Angus Robertson stated, "Britain had resorted to going to its allies 'with a begging bowl.'"[114]

The repeated sightings of a suspected Russian attack submarine in the vicinity of Britain's ballistic missile submarine base has raised doubts as to the military's capability to protect its sea-based nuclear deterrent. It complicates the struggle for Britain's political

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[110] Kylie McClellan, "Britain Calls on NATO Allies to Help in Submarine Hunt," *Reuters*, December 10, 2014, http://uk reuters.com/article/2014/12/10/uk-britain-defence-idUKKBN0JO15H20141210.

[111] Ibid.

[112] Various authors, "How Far Do US-EU Sanctions on Russia Go?" *British Broadcasting Company*, September 14, 2014, http://www.bbc.com/news/world-europe-28400218.

[113] Jamie Merrill, "MoD Asks for American Help in Searching for Russian Submarine Near Scotland," *The Independent*, January 8 2015, http://www.independent.co.uk/news/uk/politics/mod-asks-for-american-help-in-searching-for-russian-submarine-near-scotland-9966080.html.

[114] Victoria Ward, "MoD Forced to Ask U.S. for Help in Tracking 'Russian Submarine,'" *The Telegraph*, January 9, 2015, http://www.telegraph.co.uk/news/uknews/defence/11334836/MoD-forced-to-ask-US-for-help-in-tracking-Russian-submarine.html.

parties to identify their stances on defense spending cuts already planned during an election year.[115] Additionally, "a leading House of Lords committee opined that Britain 'has not been as active or as visible as it could have been' on policy toward Ukraine and was guilty of a 'catastrophic misreading' of Russian foreign policy."[116]

While not as drastic as the Swedish submarine incident, these suspected Russian submarine sightings are an additional signal aimed at Britain by Russia, which has also directed numerous strategic bomber aircraft sorties in the vicinity of British airspace and sent several surface ships through the English Channel this year.[117] While these two incidents have not generated a strategic signal out of Britain, they have added their weight to the other coercive Russian military actions of the past year. Whether Britain chooses to act or not, these submarine incursions have highlighted a discrepancy in its ability to protect its ballistic missile submarine fleet with its own indigenous military forces. This coercive signal, at little expense on Russia's part, has forced a new, distracting element to Britain's strategy regarding Russia: if money is spent toward maritime patrol craft procurement without an increase in defense spending, then that money cannot be spent on other equipment or personnel to effect the current situation in Ukraine.

[115] No author, "Fight or flight Will Be the UK's Choice on Defence," *The Financial Times*, February 26, 2015, http://www.ft.com/intl/cms/s/0/bb1cc5a0-bdb9-11e4-9d09-00144feab7de html#axzz3TUmTjC2n.

[116] No author, "Fight or flight Will Be the UK's Choice on Defence," *The Financial Times*, February 26, 2015, http://www.ft.com/intl/cms/s/0/bb1cc5a0-bdb9-11e4-9d09-00144feab7de html#axzz3TUmTjC2n.

[117] Alan Cowell, "British Planes Intercept Russian Bombers," *The New York Times*, February 20, 2015, http://www.nytimes.com/2015/02/20/world/europe/britain-scrambles-jets-to-intercept-russian-bombers.html?_r=0. *See also* Thomas Hirst, "Russian Warships Are Back in the English Channel," *Business Insider*, February 17, 2015, http://www.businessinsider.com/russian-warships-are-back-in-the-english-channel-2015-2.

C.   CONCLUSION

This over-arching trajectory of naval diplomacy provides us with a number of points to ponder. First, the establishment of naval forces as an attractive—and for many decades the modal—form of global coercive diplomacy under the *Pax Britannica*. The second is that the early race among naval powers to show capacity to one another based their assumptions on coercive and diplomatic power on capital ships. These metrics of capacity (number, tonnage, speed, gun size, number of batteries, etc.) provided relatively transparent and uniform metrics identifiable by all parties. Third, recent decades have seen two trends: rivals choosing to offset rather than match U.S. carrier supremacy, and emerging fiscal constraints on the United States to maintain its carrier fleets. Given these trends, constraints, and emerging opportunities, it may be time to rethink the uses of the submarine force in U.S. naval policy.

V.   CONCLUSIONS AND RECOMMENDATIONS REGARDING THE FUTURE USE OF THE SUBMARINE FORCE

The world in which the naval forces of the United States operate continues to evolve. The Chief of Naval Operations recently voiced concern regarding the growing Chinese cruise missile and conventionally armed ballistic missile arsenal, weapons of significant reach and powerful enough striking power to likely generate a "mission kill" on most surface ships.[118] With tensions rising in the South China Sea over the possession of several island chains and, more importantly, rights to the resources in the region, surface ships stand the risk of being placed out of commission or sunk by weapons of this power. Iran, too, possesses sufficient numbers of cruise missiles to do serious harm to any surface fleet in the Arabian Gulf. Although it is unlikely that overt conflict with either of these states looms directly over the horizon, they are just two examples of regions in which the United States requires strategic signaling options in ongoing diplomatic conflicts where opponent states possess the power to harm aircraft carriers at long range.

Nuclear powered submarines, long capable of deterrence via their nuclear arsenals, are also capable of using other means in forcing opponents to alter their strategic dialogue with the United States and its allies. The Navy's focus upon ships such as aircraft carriers as the visible means by which strategic policies at home are galvanized into coherent diplomatic signals abroad undervalues the submarine force, specifically its fast attack submarines. Other states in the recent past have, through their submarine forces, achieved success in forcing their opponents to evaluate the necessity of sinking costs or tying hands in order to prevent further incursions of these submarines. Although these submarines did not themselves constitute a signal of resolve, they imparted pressure on their opponents to decide whether a strategic signal of resolve was warranted in response. In so doing, they altered their opponents' strategic-level decision-making processes, and this is a language that the United States would be well served to learn.

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[118] Bill Gertz, "Chinese Missile Forces Pose Threat to U.S. in Future Conflict," *The Washington Free Beacon*, July 28, 2014, http://freebeacon.com/national-security/chinese-missile-forces-pose-threat-to-u-s-in-future-conflict/.

Strategic signaling remains an important facet of American foreign policy. Without this ability to exchange information with our opponents regarding our resolve and commitment, we cannot appropriately advocate for ourselves and our allies in times of diplomatic conflict. The navy, especially its aircraft carrier arm, possesses unique speed and independence of operation. Its ships can reach any region under contention in the world in order to provide credible evidence of the United States' interest in security and stability. The aircraft carrier as a signaling tool has endured for decades, and has become synonymous with American authority and interest.

The political and military requirements placed upon the fleet in recent years have reduced the readiness of much of the fleet. Long deployments stacked more closely together have forced delays in critical maintenance for many ships throughout the fleet, and those cumulative problems are now impacting the fleet's readiness.[119] The *USS Gerald R. Ford* may be afloat, but several of her critical systems including her electromagnetic aircraft launching system and her advanced arresting gear system both suffer from extremely high failure rates at the Lakehurst testing facility.[120] The system upon which the United States has relied as a major facet of its foreign policy since the 1950s struggles today to maintain the constancy of its signal strength.

Another symptom of this maintenance shortfall in combination with the budgetary pressures of sequestration will occur in the summer of 2015, in the western Pacific. The carrier *USS George Washington*, due for an extended refueling overhaul in Virginia, will not be replaced by its intended counterpart *USS Ronald Reagan* for several months, leaving the western Pacific without a U.S. aircraft carrier in the region.[121] In this situation, and in others, where American presence is desired but no aircraft carrier is

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119 Valerie Insinna, "Navy Surface Fleet Faces Rough Waters Trying to Maintain Ships," *National Defense Magazine*, March 2013, http://www.nationaldefensemagazine.org/archive/2013/march/Pages/NavySurfaceFleetFacesRoughWatersTryingtoMaintainShips.aspx.

120 No author, "First New Super Aircraft Carrier Will Not Launch Aircraft at the Desired Frequency and Will Need Til 2020s to Sort Out Problems," *Next Big Future*, March 5, 2015, http://nextbigfuture.com/2015/03/first-new-super-aircraft-carrier-will.html.

121 Tetsuro Kosaka, "East Asian Waters to Be U.S. Aircraft Carrier-Free For A Time," *Nikkei Asian Review*, November 27, 2014, http://asia.nikkei.com/magazine/20141127-Abenomics-on-the-ballot/Politics-Economy/East-Asian-waters-to-be-US-aircraft-carrier-free-for-a-time.

available, the strategic signaling lexicon with which opponents can be informed of our resolution and capability must be expanded. Surface ships and aircraft may provide information to opponents in this regard, but as the case studies have presented, the possible benefits of a costly signal of capacity by a nuclear fast attack submarine ought to be considered as well.

These "tacit revelations" as shown by other states possess great potential for disrupting an opponent's short- and long-term strategic dialogue and internal decision making processes. While not always successful, they serve as powerful signals by revealing defensive weaknesses in their opponent's security without imposing a significant cost on the state responsible. Most interestingly, because of a submarine's stealth, the state responsible for sending a signal via a submarine's "tacit revelation" is free to deny involvement and so enjoy whichever repercussions it chooses. This mode of operation certainly seems to fit in with Russia's hybrid war methods in Ukraine. The pivot to Asia has placed more operational U.S. submarines in the Pacific. At a time when regional submarine proliferation amongst the east and Southeast Asian states these nuclear submarines will provide a signal of American resolve in the region through their homeport visits and interoperation with allied navies. This is all the more feasible now that Submarine Squadron 15 based out of Apra Harbor, Guam, will gain a fourth fast attack submarine during the fiscal 2015 year.[122] The increased number of submarines should be leveraged, as other states have leveraged their platforms, in order to send strong signals as necessary.

One arena in the geopolitical realm that may benefit from submarine "tacit revelations" in addition to its normal capabilities such as ISR is the Arctic Ocean. The United States Navy does not possess any surface combatants whose construction included an ice-hardened hull. The only icebreakers in service or planned for construction capable of Arctic operations belong to the United States Coast Guard, and they are old enough

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122 Gaynor Dumat-ol Daleno, "Deputy SecDef: 4th Submarine to Be Deployed to Guam," *The Navy Times*, April 10, 2013, http://archive.navytimes.com/article/20130410/NEWS/304100029/Deputy-SecDef-4th-submarine-deployed-Guam.

that their reliability is questionable.[123] The Russian Federation through its actions toward both Britain and Sweden has shown that it takes signaling via submarines seriously. Russia has begun the long process of modernizing and rebuilding its 1980s-era submarines, in an effort to both modernize its afloat nuclear deterrent forces and bolster the security posture of its Arctic borders.[124]

President Vladimir Putin recently outlined Russia's new security strategy, and the Arctic was one of three main points of focus.[125] The recent economic sanctions have dealt the Russian energy-based economy a heavy blow, with the ruble suffering a huge reduction in value since the sanctions' inception.[126] Despite the decrease in economic output and growth, submarines and Arctic security remain high priorities for 2015 and beyond. An Arctic "tacit revelation," either in conjunction with further economic sanctions or independently of them, has the potential to shake Russian confidence in the north and require of them more rhetoric and greater expenditures. Such a move would provide evidence to the Russian military that although it possesses the largest Arctic presence it remains incapable to stop incursions into regions it considers its back yard.

A check of this nature is perhaps beneficial to European interests, and perhaps it is not. Without sufficient information regarding Russian intentions and capabilities, this thesis cannot make such an assumption. However, this sort of trade-off is a new addition to the lexicon of naval and international diplomacy and ought to be incorporated into American policy. In a world where the most powerful states' opponents seek asymmetrical advantages, learning to leverage those advantages yourself not only provides tactical and operational insight but also an understanding of one's own weaknesses. If American submarines could behave asymmetrically emulate other states'

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123 Sam LaGrone, "Coast Guard Analysis Says U.S. Needs 3 Heavy and 3 Medium Icebreakers, Path to Ships Unclear," *U.S. Naval Institute*, February 25, 2015, http://news.usni.org/2015/02/25/coast-guard-analysis-says-u-s-needs-3-heavy-and-3-medium-icebreakers-path-to-ships-unclear.

124 Jeremy Bender, "Russia Conducted Nuclear Submarine Exercises Beneath the North Pole," *Business Insider*, February 9, 2015, http://www.businessinsider.com/russian-nuclear-submarine-exercises-under-north-pole-2015-2.

125 Ibid.

126 No author, "Russia Reveals Huge Cost of Supporting the Rouble," *British Broadcasting Company*, January 12, 2015, http://www.bbc.com/news/business-30777228.

"tacit revelation" methods in an exercise format, perhaps even more stands to be gained, both about opponents' advantages and our own disadvantages.

Unfortunately, the window on this opportunity is closing. The venerable Cold War-era *Los Angeles*-class attack submarines are retiring from service faster than they can be replaced by the more capable *Virginia*-class; this trend will likely continue into the near future.[127] This ongoing reduction is doubly frustrating because the demand signal for attack submarines has consistently risen over the past several years, so now the fleet must do more with fewer platforms.[128] Sequestration has further damaged these numbers: the four government shipyards that service submarines will likely not recover from the massive hiring and acquisition freeze in 2013 until late this year.[129] These shipyards, juggling the overworked aircraft carriers and ballistic missile submarine fleet, "will not catch those [submarine overhaul] schedules up."[130] The combined effects of slower submarine construction, sequestration and maintenance delays means that the attack submarine fleet cannot meet the basic requirements of the fleet, and the windows of opportunity for "tacit revelations" will be harder to find and exploit.

The concept of "tacit revelation" does not hold only for the world of naval diplomacy. Any facet of interaction between states whereby a limited revelation of one's covert position may generate a response orders of magnitude greater and at a much greater cost. Taken in isolation, this statement seems esoteric. But take, for example, the impact of the Sony hack upon national security and indeed upon the United States' political "mood." In December of 2014 Sony Corporation revealed that its server database had been extensively compromised and the corporation had lost huge amounts

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127 Kris Osborn, "Navy Leaders Warn of Submarine Shortfall," *DoDBuzz*, October 25, 2013, http://www.dodbuzz.com/2013/10/25/navy-leaders-warn-of-submarine-shortfall/.

128 Ibid.

129 Michael Melia, "Navy Outsources More Submarine Maintenance Because Of Budget Cuts," *Columbia Broadcasting System*, Connecticut, January 12, 2015, http://connecticut.cbslocal.com/2015/01/12/navy-outsources-more-submarine-maintenance/.

130 Dave Majumdar, "NAVSEA: Sequestration Cuts Have Caused 'Significant' Backlog in Submarine Maintenance," *U.S. Naval Institute*, October 22, 2014, http://news.usni.org/2014/10/22/navsea-sequestration-cuts-caused-significant-backlog-submarine-maintenance.

of proprietary, accounting and personal data.[131] The data loss resulted in massive monetary loss, both through loss of revenue and stock devaluation. After a reporter leaked that an anonymous source had implicated the North Korean government in the hack, the United States government placed the crime under the jurisdiction of numerous federal agencies.[132]

As this recent example illustrates, the world of cyberwar perhaps represents the closest analogue to "tacit revelations" as a means of sending costly signals of capacity and eliciting changes in an opponent's strategy. It may be advantageous to further confuse one's opponent by revealing one's true nature during a cyber-attack. Cyber warfare, at its heart, seems to focus upon striking an adversary out of anonymity. But what if just enough credence was given to the source (or false source) of the attack to lead stricken opponents in the wrong direction? Besides risking greater conflict and presenting opponents with the consequences of their flawed digital defenses, opponents must invest heavily in security upgrades to prevent such a reoccurrence, even if it was the result of a 0-day attack.[133]

Whether it is ultimately beneficial for the United States to pursue costly signals of capacity that influence our opponents, the world of strategic signaling is witnessing a sea change. Where once two states measured the worth of their words against the thickness and quality of their navies' armor, their speed and their guns' throw weight, now the waters are muddied. The greatest sea power afloat may elect to steer its own course in the matter of fleet construction, but all other comers adapt to that state's choices in order to gain a relative advantage. It behooves that greatest power to pay keen attention to the advantages those others have found, and take advantage of them itself. The United States submarine force, long proponents of covert posturing as the predominant means of achieving its objectives, must learn that it does not always pay to remain eternally unseen.

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131 Kim Zetter, "Sony Got Hacked Hard: What We Know and Don't Know So Far," *Wired*, December 3, 2014, http://www.wired.com/2014/12/sony-hack-what-we-know/.

132 Ibid.

133 A 0-day attack is one that takes advantage of a vulnerability in a system's coding such that a patch written on the same day of the attack can entirely nullify its effectiveness.

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